

Claim Listing

The following claim listing replaces all previous claim listings in this matter.
1-49 (cancelled)

50. (Currently Amended) The substrate of claim 47 56 wherein differently encoded types of particles have different biological reagents bound thereto.

51-54 (canceled)

55. (Currently Amended) The substrate of claim 47 56 wherein the substrate comprises silicon or doped silicon.

56. (newly added) A process of making a matrix of random arrays on a substrate, wherein the random arrays are formed by random placement of a group of particles, wherein the particles are encoded with a label, and wherein differently encoded particles have a different label, comprising:

(i) placing and confining a group of particles into one or more sites on a substrate having a plurality of sites, so as to form a first confined group of particles occupying particular sites;

(ii) recording the positions of particles within said confined group;

(iii) placing and confining an additional group of particles into unoccupied sites on the substrate so as to form an additional group of confined particles occupying particular sites;

(iv) recording the positions of particles within said additional confined group; and

repeating steps (i) to (iv) several times so as to generate a random encoded array of particles.

57. The process of claim 56 wherein the arrangement of the particles in the sites is random.

58. The process of claim 56 further comprising the step of affixing the particles onto the substrate.

59. The process of claim 56 wherein the particles are placed and confined in the sites by first placing the particles into an electrolyte solution on a substrate and then applying an electric fields so as to translocate and confine the particles into the sites.

60. The process of claim 56 wherein the substrate is a planar electrode, and another planar electrode is provided, and the substrate and the planar electrode face each other but lie in different planes and the electrolyte solution is located between them, and they are used to apply the electric fields, and wherein at least one of the electrodes is light sensitive and an illumination pattern projected thereon is used, in conjunction with the electric field, to translocate the particles to the illuminated areas in the pattern.

61. The process of claim 56 wherein the electric field and the illumination pattern are controlled by a computer and a user interface system to confine, translocate, and merge particles as desired.